

OUR FOOD FROM FARM TO TABLE



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CFTRI-MYSORE



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Our food from fa.

NEL EDWARDS



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Page No.

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OUR FOOD FROM FARM TO TABLE

by

LIONEL EDWARDS

With Descriptions and Questions by
A. VOYSEY and E. J. STOWE



METHUEN & CO. LTD. LONDON
36, Essex Street, Strand, W.C.2

First published, November 11th 1943
Second edition, revised, 1951

2304 ✓

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CATALOGUE NO. 7377/U

PRINTED IN GREAT BRITAIN

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READ THIS PAGE FIRST

Everything that we eat and drink, except the salt on our plate and the water in our glass, is produced on somebody's farm somewhere. The animals that provide us with meat, eggs and milk are fed on plants grown in this country or abroad, and these plants, as well as the vegetables and fruit that we ourselves eat, get much of their nourishment from the soil in which they grow. Our life, therefore, depends upon what the soil produces, and it is the farmer's job to keep the soil in a fit state for growing crops. This is called *keeping the land in good heart*, and it is the most important thing in the world. If we want to be healthy and happy we must take care of the land.

The pictures in this book have been drawn in order to show us how our food is produced in this country. One short book, however, cannot possibly tell the whole story, and we shall have to discover for ourselves some of the things that have been left out. Ways in which this book can help are discussed on pages 62-63.

I. BREAD 1

1. MANURING. A field that is to grow wheat is usually prepared at the end of the summer or in the early autumn. Sometimes it gets a *dressing of dung*. This means that farm-yard manure, which is made from the droppings of the animals mixed with straw from the yards and sheds, is put down in heaps and then spread over the field. The carter in the picture carries a claw-like tool with which he drags the manure off the back of the cart to form heaps. These heaps must be placed at regular intervals and the manure must be spread evenly.

2. CULTIVATION. The land is then ploughed, and the manure is thus put underground where it can do good. The picture shows a three-furrow plough at work. Birds follow behind to feed upon the grubs and earthworms that are uncovered when the soil is turned over. What birds are these, and why might we expect to find such birds here?

3. SOWING SEED. Wheat is here being sown by means of a *drill*. This implement puts the seed into the soil in parallel rows about 7 inches apart. The driver walks behind one wheel of the drill, steering a straight course by the wheel-mark ahead. Another way of sowing seed is shown on page 27, fig. 2.

BREAD I



I. BREAD 2

4. COVERING THE SEED. Behind the drill (see Picture No. 3) comes a harrow that completes the work of covering the seed with moist soil, hiding it from the birds, and shutting out the light.

5. HARVESTING. By July or August (later in the north) the wheat will be ripe and ready for cutting. The implement most often used is a *reaper-and-binder* (called a *binder*, for short), which cuts the stalks a few inches above the ground and ties the plants into handy-sized bundles called *sheaves*. The short stalks and roots that are left form the *stubble*. In the picture a *sheaf* has just been thrown out by the binder on to the ground. The sheaves will later be stood up to dry in small groups called *stooks*. The duty of the man riding on the binder is to see that the machine does its work properly.

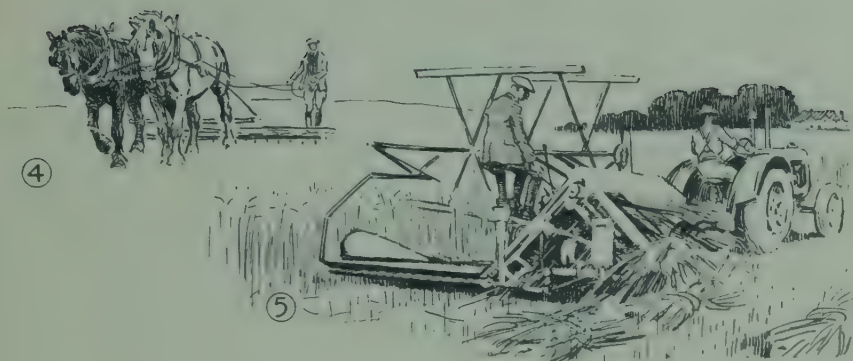
6. THRESHING. The seed of the wheat plant is the grain from which flour is made. It is knocked out of the *ear* of the plant by a *threshing machine* or *drum*. The grain comes out at this end into sacks. The straw is delivered at the other end where it is either built into a stack or is pressed into tight, squarish bundles called *bales*. The broken bits, called *chaff* and *cavings*, are blown along the raised tube on the right and fall into a heap. Weed seeds and other rubbish come out underneath the drum.

Sometimes corn is harvested with a *combine-harvester* (called a *combine*, for short). This machine works round the field, cutting the crop like a binder, and threshing it like a threshing machine.

7. The threshed grain is stored in the granary until it goes to the miller to be ground into flour. The remedy for RATS is CATS, but the grain must be stored so that the cats have a chance to follow the rats between and behind the sacks.

8. This is the finished loaf that was baked from the flour that was ground from the grain that was threshed from the wheat that was grown in the soil that was manured and cultivated by the farmer.

BREAD 2



2. MILK 1

Milk also is made partly from the soil, for the cow turns her food into milk, and her food comes from plants.

1. RATIONING. This means feeding each cow upon a measured quantity of food. If the ration is as nearly as possible what the cow needs, then she is receiving a *balanced ration*. Cows are fed on many different kinds of food, of which grass, hay, corn, and cakes made from imported oil seeds are common ones. The cowman in the picture is measuring out the corn and cake, putting each cow's ration into a separate box. The boxes will later be emptied into the cows' mangers. A corn mill for grinding and crushing corn, and part of a cake cracker (the cake is often sold in large slabs) are shown in the picture.

2. MACHINE MILKING. With this type of machine the milk is drawn from the cow's teats along a tube that connects the milking shed with the dairy. On its way the milk collects in a glass container, suspended from a spring-balance, and the amount of milk given by each cow is thus measured. This type of machine is called an *auto-recorder*.

3. MACHINE MILKING with a *bucket-type* of machine. The milk goes no further than the bucket standing beside the cow. When the cow has been milked the bucket is disconnected and carried to the dairy. In both types of machine the suction that draws the milk out of the udder is provided by an air-pump, driven by an engine or electric motor, placed at one end of the milking shed.

2. MILK 2

4. HAND MILKING. A good milker handles his cow gently, milks quickly, and *strips* thoroughly. Stripping is the withdrawal of the last cupful or so of milk from the udder. Even when the cows are machine milked the stripping is often done by hand.

5. COOLING. Milk comes warm from the cow and must be cooled at once. Cooling the milk helps it to keep sweet (that is, not sour). The milk is poured into a large container from which it trickles slowly down over the *outside* of the cooler while cold water passes continuously through the pipes *inside*. Below the cooler stands a churn to catch the cooled milk.

6. If the milk is to go to a town dairy it is sent away in churns. This type of churn holds 10 gallons.

7. If the milk is not collected from the farm by a lorry, the farmer has to deliver it at the railway station or at some collecting centre. A *milk float* is a light, two-wheeled horse-drawn vehicle that is low on the ground and therefore easily loaded. A churn full of milk is a heavy thing to lift single-handed.

8. BOTTLING. When the milk goes direct from the farm to the people who drink it, the farmer is said to have a *milk-round* and to *retail* milk. In this case it is usual for the milk to be put in glass bottles at the farm. Filling bottles is a slow and tedious job, and a *bottling machine* that automatically delivers exactly a pint (or a half-pint) at a time, is therefore used on some well-equipped farms.

9. Some firms, called *dairies*, have nothing to do with the production of milk but buy it in bulk from the farmer, bottle it, and retail it to the *consumers* (the people who drink it).

MILK 2



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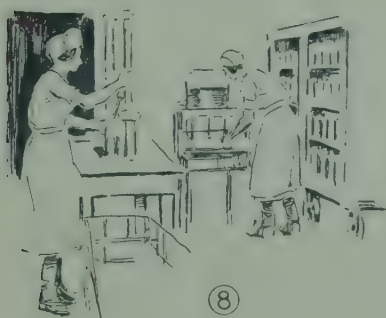
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3. BUTTER

1. SEPARATING. If milk is allowed to stand undisturbed for a while, the fat in it rises to the top in the form of *cream*, and if this is skimmed off *skim milk* is left. A quicker and more thorough way of separating these two parts is to put the milk through a *separator*. The handle is turned at a steady speed, and the milk trickles downwards through the machine, from the container on top, and comes out through two spouts as cream and *separated milk*. Butter is nearly always made from cream alone.

2. CHURNING. The cream is turned into butter inside a revolving *churn*. The shaking that it gets makes the cream separate into little grains of butter and a liquid called *butter-milk*. This liquid is drained out of the churn and, like the separated milk, is a splendid food for pigs and chickens. The butter is washed inside the churn with a little clean cold water and then transferred to the table of the butter *worker*.

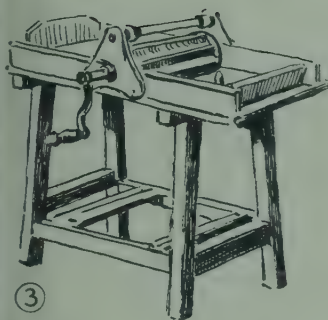
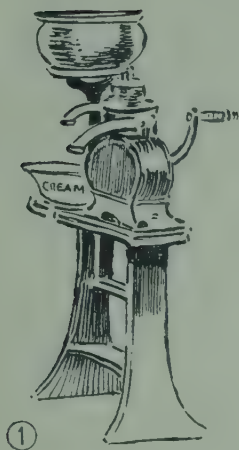
3. WORKING. The grooved or *fluted* roller can be revolved by means of a handle, and can also be moved to and fro on the table. It is worked backwards and forwards over the butter, pressing the grains lightly together and squeezing out the water.

4. MAKING UP. When the butter has been worked it is made up into neat blocks each weighing a pound or half of a pound. It is handled by means of two pieces of grooved wood called *Scotch hands*. The blocks of butter are often ornamented with patterns.

5. Plenty of buckets are needed for butter-making, and in good dairies these are kept beautifully clean inside and out. A measuring pail is useful, and this is a straight-sided (not tapered) pail with a strip of brass, marked in pints and gallons, soldered to the inside.

Most of our butter is nowadays made in large quantities by machine, in factories called *creameries*.

BUTTER



4. CHEESE

1. MILKING. If milk is to make really good cheese (or butter) it must be as clean as possible. The cows ought to be washed before they are milked, and the milkers themselves must be clean, and should wear washable overalls.

2. ACIDITY. Before cheese-making starts, the milk must become slightly *acid* (sour), and the degree of acidity, or amount of sourness, must be exactly right for the type of cheese that is to be made. The girl in the picture works in a cheese factory, and at the moment she is measuring the acidity of a sample of milk. The apparatus in use is an *acidimeter*. On the table is a *pipette* for accurately measuring the sample of milk; a porcelain dish in which the test is made; and a bottle of *indicator*. On the shelf above is a bottle of caustic soda of a known strength.

3. CUTTING THE CURD. The slightly acid milk is placed in a cheese *vat* and curdled by the addition of *rennet*. It is thus turned into *curd* and *whey*. The temperature of the milk can be controlled by means of warm water within the hollow sides of the vat. The solid part, the curd, is cut up by means of a special knife with horizontal blades. The liquid part, the whey, is run out of the vat through the largest of the three taps. The cut-up curd is put through a grinding *mill* (on the right of the picture), and then placed in a *mould*. A cheese *press* is used to press the curd together and to squeeze out moisture.

4. CHEESES IN STORE. When the cheese is removed from the press it is bound around with wide linen bandages, labelled, and placed in a cool store-room to *ripen*, i.e. develop the right flavour and texture.

5. A piece of Cheshire cheese. There are many different kinds of cheese, and most of them are named after the places where they were first made, e.g. Cheddar, Derby, Stilton, Leicester, Wensleydale, Caerphilly, etc. There is a lot of geography in cheese.

CHEESE



5. BACON 1

1. SOW AND LITTER. A family of young pigs is called a *litter*. For the first month or so of their lives they live almost entirely upon their mother's milk. Many times during the day she lies down for them to get at her teats.

2. STORES. Pigs are *weaned* (taken away from their mother the sow) when about 8 weeks old. By then they ought to be feeding well on meal, otherwise the sudden change in food may upset them. *Store* animals are those that are growing but are not yet big enough or fat enough to be turned into meat. Pigs are usually 5 to 8 months old when ready to be made into pork or bacon. Young store pigs are sometimes called *growers*.

3. WEIGHING A WEANER. Little pigs can easily be weighed in a bag hung upon a spring balance. The rate at which they grow depends very much upon the sow's milk, so their weight at weaning time gives us some idea of the value of the sow.

4. FATTENING PIGS INDOORS. The open-air is the most healthy place in which to live, but animals put on weight more quickly if kept in cosy places indoors. Many farmers therefore keep their sows and young pigs out-of-doors and bring them in later to be *finished off* (complete their growth and fattening). The houses must be kept clean and be well ventilated; there must be plenty of warm bedding, and the meals must be satisfying and given at regular times of the day.

5. WEIGHING A BACONER. The best demand is usually for pigs of a certain weight, but this weight depends upon the district and the needs of the day. Careful farmers therefore weigh their pigs before deciding to send them to market.

6. DRESSING THE CARCASE. Animals for slaughter should be handled without cruelty and killed painlessly. A pig is then put into scalding water to remove the bristles and afterwards hung up on a notched stick (a *gambrel*). The stomach and intestines are removed first, and then the *pluck* (heart, liver, and lungs). This is called *dressing* the carcase.

BACON 1



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5. BACON 2

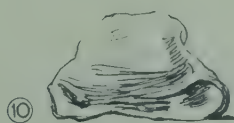
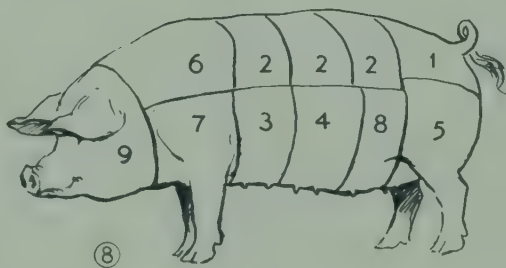
7. DRY SALTING. The carcase is now split into two halves, and the head and the lower halves of the legs are removed. If the meat is to *keep* (not go bad) it must be *cured*, and it then becomes bacon. There are several ways of curing it, one way being to rub in dry salt. There is rather more than this to it, but the details need not concern us now.

8. VALUE OF CUTS. The different parts of the pig's carcase are called *cuts*, and some are more valuable than others. In the picture on the opposite page the cuts are numbered according to their value, No. 1 being the best.

9. SIDES OF BACON. Each of these in the picture is the left-hand half of a pig, cured.

10. Bacon ready for slicing into rashers for the breakfast table.

BACON 2



6. BEEF 1

1. SUCKLING. Every young animal whose mother gives milk (that is to say, every *mammal*) must be fed at the beginning of its life on this milk. Otherwise it will not be healthy, nor will it grow as it should.

On some farms the calves are allowed to take their milk direct from the cows, and this *suckling* continues for several weeks. When a calf is *weaned* it stops having milk and lives entirely on other foods. This change must be a gradual one, otherwise the calf's digestion will be upset.

Sometimes a few cows are kept specially for rearing calves. Each cow, for a few weeks after calving, suckles her own calf, and perhaps one belonging to some other cow as well. When these two reach weaning age they are replaced by other and younger calves.

It may need great patience on the part of the stockman to persuade a cow to suckle a strange calf.

2. BUCKET-FEEDING. On other farms the calves are fed on milk from a bucket. This milk is given fresh from the cow, and before it has had time to get cool.

The two calves in the picture, with their heads in the pails, have nearly finished their meal. Otherwise, the pails would be standing securely on the ground.

3. TROUGH-FEEDING. These three *beasts* (a general name for cattle) are about 10 months old and have long ago been weaned. The trough probably contains a little corn or cattle-cake, and the way in which the animals are 'scoffing' it shows that there is nothing wrong with their appetites. This is a good sign and tells the farmer that the animals are getting on all right, or, as he would say, *doing well*.

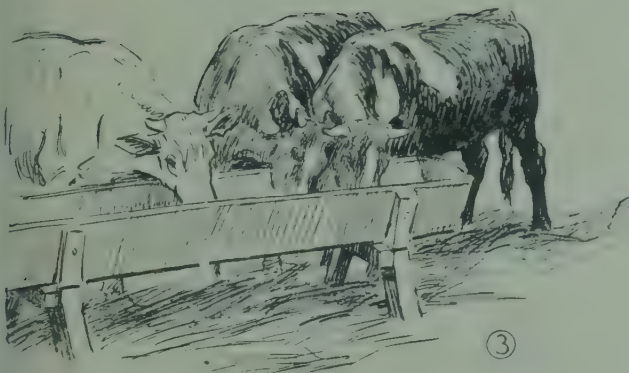
BEEF 1



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6. BEEF 2

4. FAT BULLOCKS IN A STRAW YARD. Most beef is produced from the carcasses of animals that are about 2 to 3 years old. While these animals are growing up they are called *store* cattle, but for the last few weeks before being sold they receive a more fattening diet and are *finished* (prepared for market). During the winter cattle are finished in yards. They get roots, chaff, hay, corn and cake, and they need a comfortable straw bed upon which to rest while they digest all this good food.

5. OFF TO MARKET. Note the hoops over the lorry. These support a canvas cover to keep the animals dry in wet weather. Although one sees a great deal of rough, thoughtless cruelty in market, animals should never be handled roughly. It is cruel, and it reduces the value of the animal.

6. GRADING. In normal times cattle are sold according to their size and weight and the quality of their flesh. The *grader* in the picture is estimating the shoulder and girth of the bullock.

7. This is the left half of a bullock's carcase, hanging in the butcher's shop before being cut up into joints. The skin (*hide*) and internal organs have been removed.

8. ROAST BEEF. A part of the carcase of a bullock that was fed by a farmer on food grown on the land.

BEEF 2



7. MUTTON 1

1. SUMMER ON THE DOWNS. On the downlands of southern England you sometimes meet a flock of grazing sheep. The shepherd, with his crook and dinner-basket, walks behind or ahead of his flock according to the custom of the district. His dog is never far away, though it does not come into the picture.

The sheep are probably *ewes* (mothers) whose lambs have recently been *weaned*.

2. WINTER ON THE PLOUGHLANDS. In many parts sheep are *folded* on *roots* for a part of the year. This means that they are enclosed in a pen made of hurdles erected in a field that grows turnips, swedes, or some such crop. Every day a new pen is erected and the sheep thus given fresh food. The sheep that are being fattened for market are usually allowed to have first go at the roots.

The shepherd fixes his hurdles by means of stakes driven into the ground in holes made by a heavy iron bar, pointed at one end.

3. LAMBING PEN. On some farms an elaborate shelter is built for the protection of the ewes and their young lambs. Lambing-time for such a flock is usually between January and March. The shepherd often lives in a hut close to the lambing pen, for his ewes and their babies need care at all times of the day and night.

In the picture he is standing inside one of the small pens, with a lean-to roof, put up to shelter a ewe and her newly-born lamb. When these two have got to know each other they are allowed to mix with the rest of the flock.

In the foreground is a *cradle* that the shepherd fills with hay.

MUTTON 1



7. MUTTON 2

4. ON THE HILL. There are many very hardy breeds of sheep that know how to find food and to look after themselves on the hills. One of these is the Kerry Hill breed, and the picture shows a flock of them being brought down from the hill by the shepherd and his dog. Kerry Hills can be recognized by their black noses and knees.

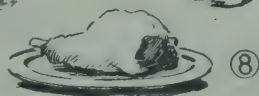
5. TROUGH FEED. In the early spring the ewes and lambs need more nourishment than is in the grass alone, so the shepherd is letting them have a bit of cake and corn — 'a little something out of a bag'.

6. SHEEP FAIR. In the autumn, many sheep sales or fairs are held in different parts of the country. Many farmers who have roots to be folded attend these sales, for they want the sheep for treading and manuring the land, which, as a result, will grow better crops next year.

7. SKINNING. Finished, fat sheep and lambs are bought by butchers for slaughter, and to sell in their shops. The carcase is *dressed* by removing the insides and the skin. Dressing is, therefore, partly undressing.

8. MUTTON. A leg of mutton, produced by the sheep from corn, roots, and hay grown on the farm.

MUTTON 2



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8. OATMEAL

1. PLOUGHING. Oats, unlike wheat, grow best under a cool, moist climate. They are, therefore, the most important corn crop in many parts of Great Britain, especially in the hilly country of the west and north. Scotland grows a lot of them, and the picture shows a Scottish team ploughing the land in preparation for sowing.

2. SOWING. This method of sowing seed is called *broadcasting*. The sower carries the seed in a *skep*, or *sidlip*, and he is broadcasting *on the furrow*. This means that so far the land has been only ploughed and has not been harrowed down to form a seed-bed (see p. 5, fig. 4). This is not a method that is always used for oats, nor are oats the only crop to be sometimes broadcasted. It has its advantages when the soil is not in a fit state for much working.

The seed will be covered in later by a harrow working across the *seams* (furrows).

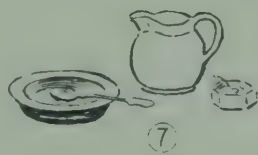
3. HARVESTING. More acres of corn are cut with a binder (see p. 5, fig. 5) than by any other means, but a scythe is often used to *open up* a field (cut the first round), and in awkward corners or in tiny fields, and when the corn has been *laid* (knocked down by wild weather).

4 and 5. ENGLISH AND SCOTTISH TYPES OF SCYTHES. The owners of these two tools will each think that his own is the better one, but both, in their masters' hands, will do good work. It is the man behind that counts.

6. WATER-MILL. There are mills of this type still at work grinding corn in some parts of the country. Where the land is hilly and the rainfall is high, there is plenty of cheap power in the fast running streams.

7. BREAKFAST-TIME. In those districts where porridge is an important part of the people's diet, plain untreated oatmeal is used. Some people take salt, not sugar, with their porridge.

OATMEAL



9. TABLE POULTRY

1. TABLE COCKEREL. This means a young male bird of a type that will one day provide somebody with a good meal. Birds of some breeds and cross-breeds grow bigger and get fatter than others, but the big, fat ones are not such good egg-layers as the others.

The bird in the picture is a cross between an Indian Game and a Light Sussex, two of the best breeds of table birds that there are.

2. CRAMMING. Table birds must grow quickly, therefore they must be persuaded to eat a lot of food. To get a perfectly finished table bird it should be crammed during the last week or so of its life. A cramming machine is used with which to fill daily each bird's *crop* with food. A rubber tube is put into the bird's mouth, the pedal is pushed down, and a small quantity of a porridge-like mash is forced gently into the bird's crop. In this way the bird eats rather more than it would in the normal way.

3. PLUCKING. When the bird has grown to the best weight for market, it is killed and then immediately plucked. The feathers come out more easily while the bird's body is still warm.

4. SHAPING. To make the carcase an attractive shape it is placed for a time in a wooden trough under a weight.

5. SMITHFIELD MARKET. This is a large London market where a great deal of meat, including poultry, is sold.

6. TRUSSED FOWL. The finished article, with the feet removed, and the legs and wings fixed in position with skewer and string (i.e. *trussed*). A young, tender bird is needed for roasting. The tough old-stagers become *boilers*.

TABLE POULTRY



10. EGGS

1. BROODY HEN. Hens are like other birds and will sit on their eggs in a nest and hatch out chicks. When they feel the urge to do this they are said to be *broody*.

2. INCUBATOR. Eggs are often hatched in incubators instead of under hens. Broodies are not always to be had when the eggs need hatching, but an incubator is ready any time. Most small incubators are heated by a lamp, and as the temperature inside the incubator must be kept even (about that of the hen's body), the lamp is fitted with an automatic damper.

3. BROODER. Chicks hatched in an incubator have no mother to care for them, so they are first kept indoors with a slow-burning lamp, covered by a roof and surrounded by a curtain, to keep them warm. As they grow older they receive less heat and more freedom.

4. LAYING HOUSE. When the *pullets* (young female birds) are nearly old enough to lay eggs themselves, they are moved into laying houses which, on some farms, are quite big buildings.

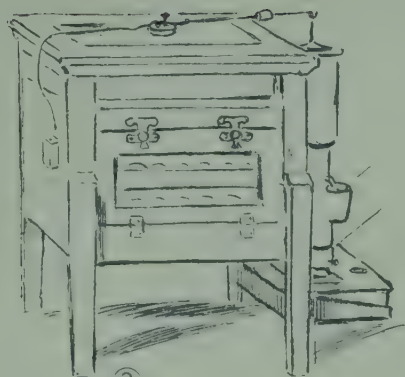
4A. TRAP NESTS. If a farmer wants to know which are his best egg-layers, he fits special doors to the nest-boxes. The door automatically drops down behind a hen when she enters a nest, and there she must remain until the poultryman comes to let her out, collect the egg, and make a note in his record book.

5. FOLD UNIT. This is a small, portable type of laying house, combined with a run that has a floor of wire-netting. The birds can eat the grass, and their droppings manure the land. Every day or so the house is moved a few yards.

6. GRADING EGGS. Eggs vary in weight. Some farmers therefore separate them into different *grades*.

7. What price a boiled egg?

EGGS



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II. POTATOES 1

1. PLANTING. A common method is to *ridge*, or *ba* the land with a double-breasted plough, plant the s potatoes in the furrows between the ridges, and then t the soil back over the potatoes by *splitting the ridges*.

2. SPLITTING THE RIDGES. Each row of seed is cove with half the soil from the ridges on either side. Th where there were furrows there are now ridges, each w a line of potatoes underneath.

3. HORSE HOEING. Weeds must be kept from growing hoeing up and down between the rows of the young pot plants. A well-trained horse needs very little guidan Sometimes a tractor is used to draw a hoe that works sever rows at a time.

4. HAND HOEING. Neither the horse- nor tractor-hoe c get between the plants in the same row, so the crop nee hand-hoeing at least once in the season.

5. PICKING. When the crop has been lifted (see the ne page) the potatoes have to be bagged up. Many hands a needed for this job.

6. WEIGHING. When the potatoes have been *graded* in different sizes, and the damaged or diseased ones pick out, they are weighed up in bags for sale. A usual weigh is one hundredweight (1 cwt.).

POTATOES I



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④



③



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11. POTATOES 2

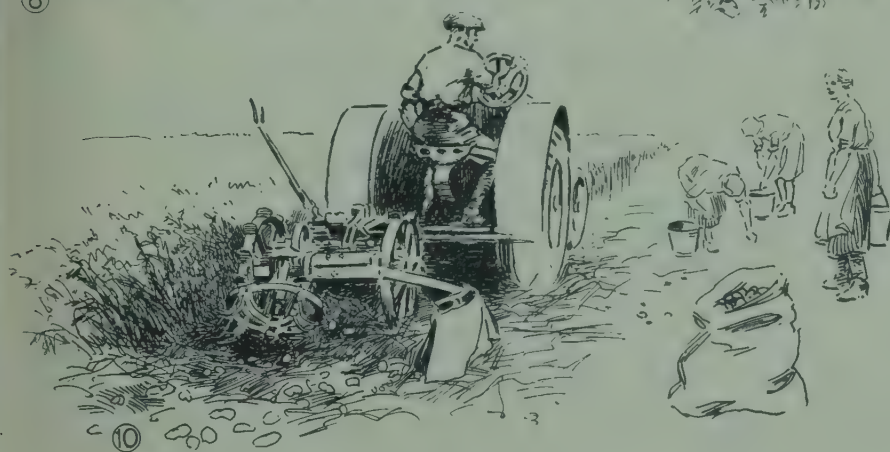
7. PLANTING. This is not always done by hand in the way shown in Picture No. 1 on the previous page. There are machines designed to do the job, and they work well and quickly.

8. EARTHING-UP. The potatoes that develop underground must be kept in the dark, otherwise they turn green and are then no good for food. Rain and hoeing tend to flatten the ridges and expose the potatoes to the light, so it is necessary, now and again, to draw the ridges up again. This is done with a double-breasted plough, drawn by a tractor or a horse.

9. SPRAYING. A potato crop may be sprayed for two reasons. In the summer it may be covered with a disinfectant (Bordeaux mixture) to protect the plants from disease. In the autumn, a week or two before the crop is ready for harvesting, the *haulm* (leaves and stems) may be destroyed by sulphuric acid in order to kill the fungus that causes Potato Blight. A bad attack of Blight would, if the haulm were not sprayed, make some of the potatoes go bad while stored.

10. HARVESTING. When the crop is ready to be *lifted*, the potatoes may be ploughed out with a double-breasted plough, or a potato *digger* (*spinner*) may be used. The revolving wheel, fitted with prongs, at the back of the machine, cuts through the ridges and flings the potatoes out sideways.

POTATOES 2



12. BROCCOLI

Broccoli and cauliflowers are two types of the same plant but broccoli are much the more hardy, and are not killed by low temperatures as easily as are cauliflowers. They can therefore, be regarded as a winter cauliflower.

1. PLANTING BY HAND. The seed from which a crop of broccoli is to be grown is usually drilled on a small separate piece of ground called a *seed-bed*. Thick rows of young plants appear, and these, when about 4 inches high, are dug up, taken out to the main field, and there planted out, 2 feet or so apart.

One way of planting (there are several) is shown in this picture; the chap in front makes a slit in the soil with his spade, and his mate comes behind, dropping a plant into each slit and firming the soil with his foot.

2. MACHINE TRANSPLANTING. When plants, sown in a seed-bed, are planted out in their permanent quarters, it is called *transplanting*. Machines have now been built to do this work quickly and quite well. On the make of machine illustrated, the broccoli plants are carried down from the platform on top by an endless belt. Underneath they are dropped into grooves made in the soil by the machine, and the earth is pressed round their roots by the inclined wheels.

3. CUTTING BROCCOLI. When a head (called the *curd*) has formed and is large enough for sale, the stalk is cut through and the head is removed with its surrounding leaves for packing.

4. PACKING. Broccoli curds vary greatly in size. They are given numbers according to how many can be packed in a crate. The picture shows the end view of a crate of No. 24's, these being packed in three lots of eight, side by side.

BROCCOLI



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13. TOMATOES

1. CULTIVATION UNDER GLASS. Although tomatoes grow and ripen well out of doors, they can be made to ripen earlier in the year and produce a greater weight of crop when grown in glasshouses warmed by hot-water pipes.

The seeds are sown in trays of soil, but when the seedlings are about 2 inches high they are planted out in earthenware pots, one plant in each pot. When the plants are 9 or 10 inches high they are transferred from the pots to their permanent quarters in the soil of the glasshouse.

This soil must be deep, well cultivated, and well manured if the plants are to grow quickly and produce much fruit. It should also be *sterilized* every three years or so, in order to keep it free from disease and insect pests.

As the plants grow tall they need support, and this is usually provided by canes, or by strings fastened to the roof of the glasshouse.

2. COVENT GARDEN. Much of the fruit and vegetables grown by farmers and market gardeners is sent to Covent Garden Market, in London, to be sold. The market begins its day's work at about 3 o'clock in the *morning*, for the crops harvested the day before must be sold and distributed to the shops and their customers as soon as possible. Otherwise they will not be fresh when they reach us.

The men that handle the produce in Covent Garden Market are called *porters*. They are very clever at carrying large numbers of baskets in the way shown in the picture. Tomatoes, however, are usually packed in boxes.

There are many interesting characters to be met among the porters, the growers who sometimes visit the market to see their produce sold, and the salesmen who buy and sell

TOMATOES



14. SUGAR BEET 1

1. CULTIVATION. Land that is to grow sugar beet must be well worked in preparation, for the seed needs a rather fine and firm seed-bed. After *drilling* (see page 3), in April, the ground is harrowed to cover the seeds and then rolled to press the moist soil around them.

2. TOPPING. Sugar beet is generally harvested in November and December. A common method is to loosen the roots in the ground with a plough-like implement, and then to pull the plants up by hand. At the same time the *crowns* (the leaves and the top of the root) are cut off. This is called *topping*. The crowns make good food for stock, and can either be carted to the yards or pastures, or folded off (see p. 23, fig. 2) by sheep after the roots have been carted away. Sometimes the crowns are stored in a *silo* and made into *silage* for feeding to cattle and sheep in the winter.

3. LIFTING BEET. Another way of harvesting beet is to use one of the large modern machines that scoop the plants out of the ground, top them, and lay them ready in rows for carting away.

SUGAR BEET 1



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15. APPLES 1

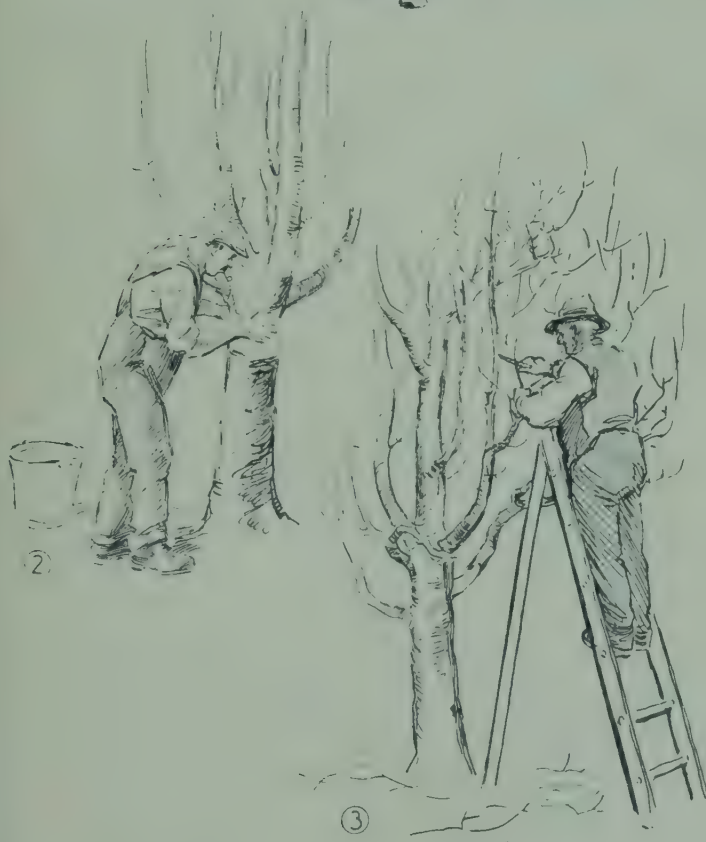
1. SPRAYING. Fruit trees need a great deal of attention. They must be washed (sprayed) several times a year with liquids that protect them from attack by insects and fungi. Insects in all their stages—eggs, larvae, pupae, and adults—have to be dealt with. If a tree is not sprayed, its fruit will show many marks of damage by insects and fungi, and its stem and branches will become covered with lichen and moss.

The hand-sprayer shown here is of a very old-fashioned type. Usually when there are many trees to spray, a pump driven by an engine is used; and this can supply spray to more than one *lance* (the pipe and nozzle held by the sprayer).

2. GREASE BANDING. The majority of the insects that attack fruit trees reach the upper parts by flying, but certain female moths are wingless and therefore have to crawl up the trunk to reach the place where they want to lay their eggs. These insects can be trapped by tying a piece of paper, covered with grease, around the trunk.

3. PRUNING. In a well-managed orchard the trees are not allowed to grow just anyhow. At some time during the winter many of their branches are shortened, and a few are cut out altogether. A knife, or a pair of secateurs, and a saw are used. Pruning controls the amount of growth made by the branches in the following summer, and in a general way it is true to say that the *harder* (more severe) the pruning, the more do the branches grow and the less fruit does the tree produce. The purpose of pruning, therefore, is to maintain a balance between growth and fruiting. A weakly growing tree is pruned hard, and a strongly growing tree is pruned lightly.

APPLES I



16. HONEY

1. STRAW SKEP. This is a type of hive not often used to-day. When the hive is in use, the hole on the top is either closed completely or covered with a similar though smaller skep. This may carry a third skep, but the top one of all is shaped as the smaller sketch shows. Bees enter the hive by the opening down below, opposite the alighting board.

2. TYPES OF BEES AND CELLS. Reading from left to right, these are: worker, queen and drone (male) bees, and then the worker, queen, and drone cells in which the different types of bees hatch out of eggs. Many cells joined together form *comb*—brood comb in which the young bees are reared, and honey comb in which the honey is stored.

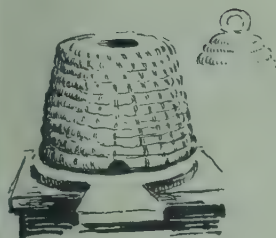
3. SMOKER. This is filled with brown paper, the paper is set alight, and pressure on the bellows (left) forces smoke out of the nozzle.

4. USING THE SMOKER. The roof of the hive has been removed, the quilt turned back to expose the frames on which the bees build comb, and a little smoke is being blown into the hive. This does not stupefy the bees, but encourages them to fill themselves with honey. This feed makes them feel less quarrelsome and therefore easier to handle.

5. HIVING A SWARM. A swarm is a migration of bees, led by a queen. The bee-keeper will, if possible, bring them back and put them in the same or in another hive. If they are to return to the same hive, the queen that led the swarm must be found, caught, and destroyed, for the swarming shows that there is another queen in the hive. In the picture, the bees have been brought back in a basket, and this has been emptied on to a sloping board, covered with a white cloth, up which it is hoped the bees will walk and re-enter the hive.

6. EXAMINING BROOD. In the lower part of the hive (compare with Fig. 4) the bees build comb in which the queen lays her eggs (see Fig. 2). During the summer, the development of these eggs into grubs (the brood) must be watched, for much can go wrong, and the bee-keeper can only put it right if he sees it in time.

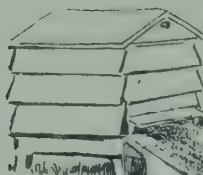
HONEY



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17. GEESE AND DUCKS

1. GEESE AND GANDER. The white bird is the gander. He is of the Emden breed. The geese are English Grey geese. Geese and ganders are not easy to tell apart, but if danger threatens, the gander will usually come to the front to protect his geese.

2. PLUCKING. All feathers are useful, and goose feathers are particularly so. The soft down feathers can be used for stuffing cushions and quilts.

3. READY FOR THE TABLE. This is how the goose is prepared. A carcase like this might weigh anything between 6 and 12 pounds.

4. AYLESBURY DUCKS. Some ducks, like some hens, are better table birds than egg-layers. The Aylesbury, though of course it lays eggs, does not lay many, but it provides an excellent carcase for us to eat. It is a white bird with a whitish skin and *bill* (beak). Although water for swimming is not absolutely necessary, ducks must have water to wash in and a swim gives them a great deal of pleasure.

5. INDIAN RUNNER DUCKS. These are better layers than table birds. Compare the upright way in which they carry themselves with the carriage of the Aylesbury. The colour of the Runner may be white or, as in the picture, fawn and white.

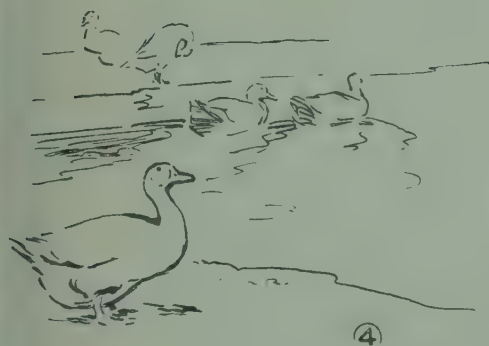
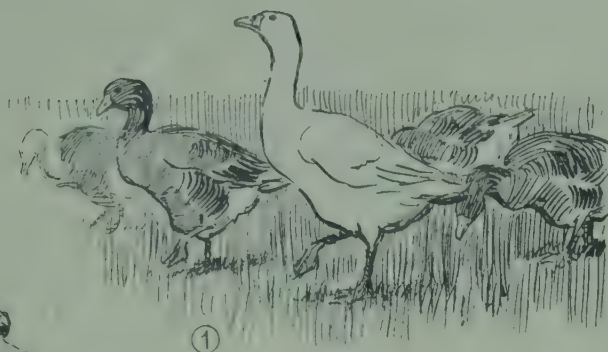
Which of these two birds is a drake?

HONEY (*continued from p. 48*)

7. EXTRACTING. The cells of the comb containing honey are *uncapped* (tops cut off), and the frames are then placed inside the extractor and spun round very fast. This flings the honey out of the cells, it collects below, and is drawn off through a tap.

8. HONEY. Extracted or *run* honey is sold in jars or tins. To produce honey *in the section*, small square frames instead of long shallow ones are placed inside the hive to be filled by the bees. Fig. 8 shows honey in section and in jars.

GEESE AND DUCKS



18. TURKEYS

1. TURKEY COCK AND HENS. Turkey eggs are seldom eaten, for the main purpose of keeping turkeys is to provide table birds for Christmas. Therefore, every egg laid must be *fertile* (capable of hatching into a chick). Therefore, a male turkey (*cock*, *stag*, or *gobbler*) must be kept with the hens.

Turkey chicks are called *poults*. When a little older, they are *pullets* (females) and *cockerels* (males). When two years old, or thereabouts, they are called *hens* and *cocks*.

The turkey cock does not like strangers, and will trail his wings, spread his tail fanwise, and blow out his crop in an attempt to impress us with his importance. Usually he looks a great deal fiercer than he really is.

2. TO MARKET. At Attleborough in Norfolk, a great many turkeys were at one time brought to market on foot. The market was held, as might be expected, a short time before Christmas. The long walk was hard on the feet, and a turkey that became lame had to be carried.

The turkeys in these pictures are of the Norfolk Black breed.

3. IN THE SHOP. The most popular weight for a turkey, plucked and drawn, is 14 to 18 pounds. It is difficult, nowadays, to find an oven big enough to hold a turkey much heavier than this.

TURKEYS



19. WATERCRESS

1. WATERCRESS BEDS. These are stretches of gently running spring water, 4 to 6 inches deep. A spring is the point at which water wells up from the soil after travelling some distance underground. During its journey through the soil, the water is filtered, purified, and made better suited to the growth of watercress.

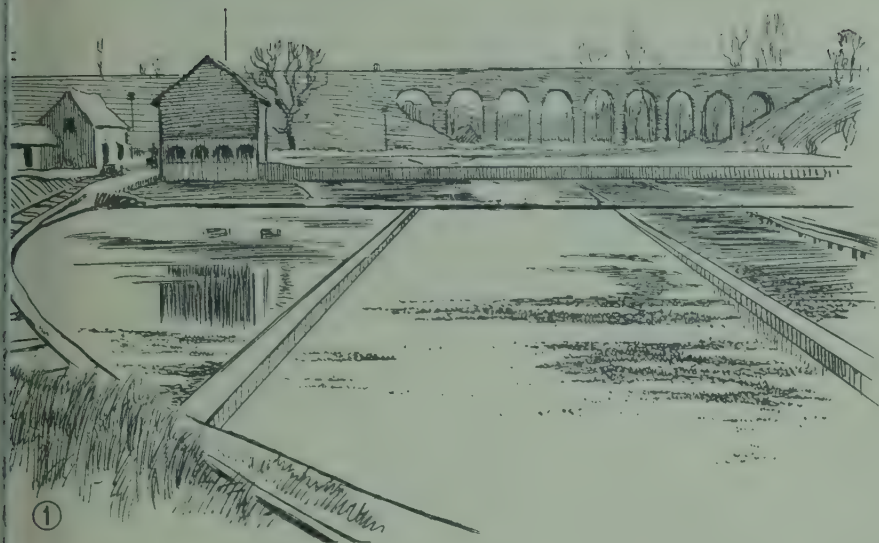
Water from underground is warmer in winter and spring than water that has been exposed to the air, and the warmer the water the more quickly does the cress grow. In summer, however, the water nearest to the spring is generally cooler than water farther away, so that the spring crop of cress is usually grown in the beds close to the spring, and the summer crop is grown in the beds farther downstream.

The watercress plants are rooted in the floors of the beds, their stems stretch upward to the surface, and the main part of the crop (the leaves and side-shoots) grows above the water. The floor has to be kept clean and free from weeds, and every year the beds are cleared out, the floor levelled, occasionally limed, and new plants are put in. Some arrangement of sluices is needed to control the flow of the water, in and out.

2. CUTTING AND BUNCHING. Watercress is cut, tied in bunches, and packed in baskets.

The banks alongside the beds in this picture are natural earth ones. Compare these with the concrete walks of the one above. If the beds are too wide to be spanned by a plank, the gatherers wade into the water, wearing rubber boots.

WATERCRESS



20. HOPS AND BEER 1

Two crops are needed for the brewing of beer: barley and hops. As hops are an unusually picturesque crop, and as the growing of barley is not essentially different from the growing of wheat and oats, hops have been chosen for illustration here.

1. STRINGING. Hop plants need supports up which to grow. In many hop gardens strings are used, new ones being fixed each spring. Their upper ends are tied to permanent overhead wires, and to reach the job the men work on stilts.

2. CULTIVATION. The soil between the rows of plants, and between the plants themselves, must be kept cultivated. This prevents weeds growing, and helps to keep the plants supplied with food and moisture.

3. DUSTING. Hops need protection from insects and disease. They are therefore *washed* (sprayed) or *dusted* with materials that kill or drive away their enemies. The machine in the picture is blowing dust over the plants.

In this garden the hops are grown on poles instead of strings.

4. PICKING. It is only the little clusters of female flowers that are picked, for it is these that the brewer needs to flavour and preserve the beer. The *bine* (stems and leaves) is pulled down, and the hops are stripped off into canvas containers called *bins*. In some parts of the country the hops are picked into large baskets. In the background are the *oasts* in which the hops are dried.

5. MEASURING. The hops are measured, by the bushel, into *pokes* (large bags) in which they are carted to the oast. A *booker* records the amount of hops picked by each group of pickers, who are paid accordingly.

HOPS AND BEER 1



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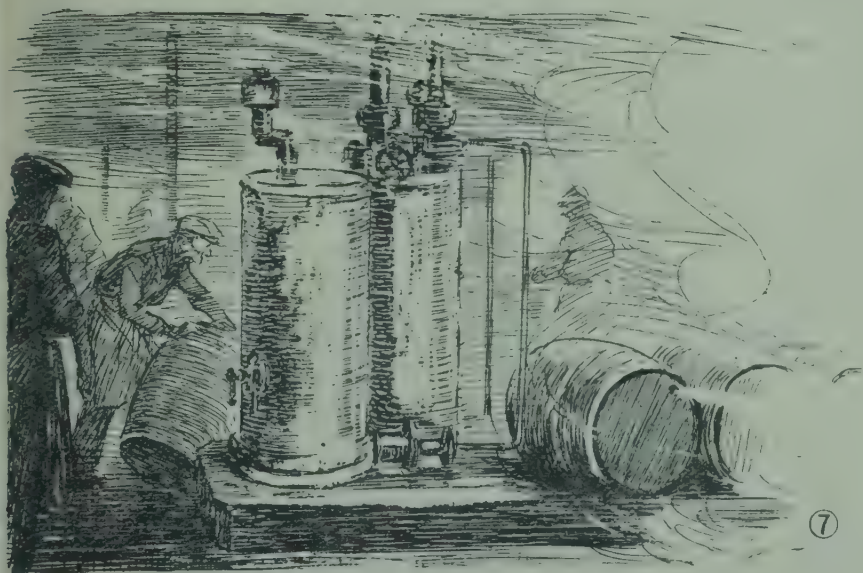
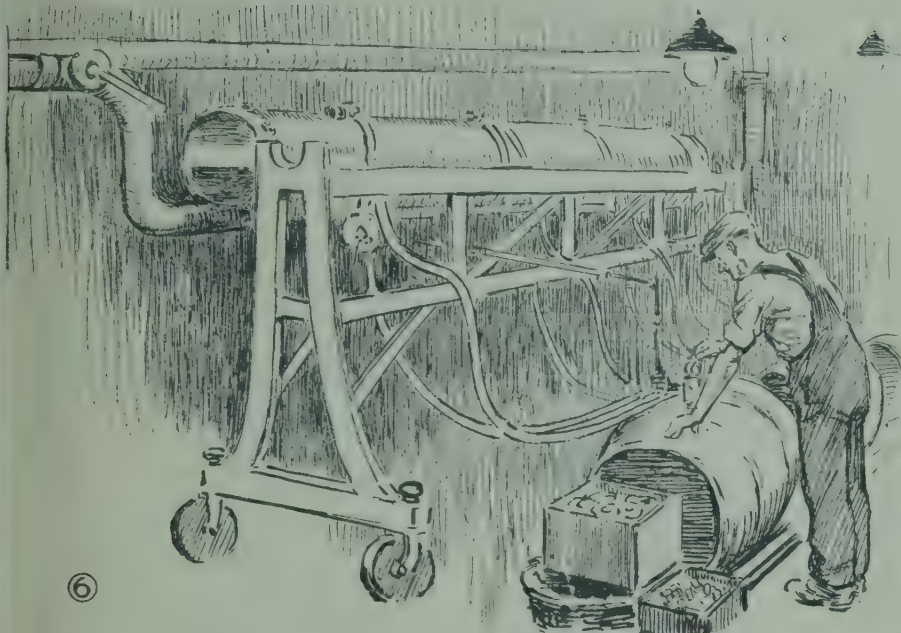
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20. HOPS AND BEER 2

6. FILLING CASKS. Each cask, or barrel, is attached to the filling machine (on wheels) by two pipes. Beer flows down one of these, and air from the cask escapes up the other. The filling machine (called a *racking* machine) receives beer from the fermenting tank through the large pipe on the left.

7. CLEANING THE CASKS. The making of good beer is a tricky business. Absolute cleanliness of everything that touches the beer is necessary. The casks are washed out and then sterilized by steam. Each cask is laid with its bunghole above a jet from which steam, produced in a boiler, is blown through the cask.

HOPS AND BEER 2



20. HOPS AND BEER 3

8. FILLING BOTTLES. Some people prefer bottled beer to *draught* beer, i.e. beer in casks. Before being put into the bottles, the beer has a gas, *carbon dioxide*, added to it. This makes the bottled beer bubbly.

The bottles are filled by a machine (left, background), from which they are carried on a moving belt to another machine that fixes a metal cap on each (centre, background). Any faulty caps are replaced by hand (right, foreground). The bottles are then packed in crates (left, foreground).

9. LOADING CRATES ON TO LORRY. Bottled and draught beer are distributed to the inns, hotels and shops by the brewery lorries.

HOPS AND BEER 3



HOW TO GET THE BEST OUT OF THIS BOOK

A picture is a very neat way of describing things. A great many pages of words would be needed to take the place of the pictures in this book, and even then the result would not be nearly as good. This means, however, that in these pictures there are many things not mentioned in the text, and if we need an explanation of them we must seek it elsewhere. A list of useful books is given on page 73, and questions giving us a lead will be found on pages 64 to 72. Best of all, however, will be a visit to a real farm and a talk with a real farmer.

At first there may be difficulties over the names for things, for these vary from one part of the country to another. A *stook* of corn in one district may be a *trave* or a *shock* elsewhere; a *headland* may be a *forracre*; and a *whipple-tree* will be unknown in a district where the word is *billet* or *swing*. We ought to collect such technical words, write them in a book in alphabetical order, and keep the book at hand for reference. The ordinary dictionary contains very few of them.

When we examine these pictures the question 'Why?' will often be asked. For example, why is a drill being used on page 3, whereas the corn is being broadcasted on page 27? Differences of this sort may be due to variations in soil and climate, or they may be merely matters of habit and custom. We must, therefore, learn to distinguish between these two sorts of reasons, and for this we need a knowledge of how things work—how plants and animals grow, and the nature of the soil. This is science, and if we are studying science we might look at it sometimes through the farmer's eyes.

It may be rather tactless to mention arithmetic in a book of this sort, but it is impossible to keep figures and farming apart. One of the differences between a visitor to a farm and the farmer himself is that the visitor's knowledge is not very accurate whereas the farmer knows things for certain. For instance, the visitor sees that the hills in a hop garden are

about a couple of yards apart and that there are 'ever such a lot' of them on an acre. The farmer, however, knows their exact distances apart and the exact number of plants on an acre. He has to know this in order to do his work properly, and if we are to hold *our* job down we must make arithmetic our servant.

The questions that follow are not put to test you but to suggest lines of inquiry. They could be multiplied over and over again, for there seems to be no limit to the matters that can excite curiosity on a farm.

One word of warning: there is still so much to be learnt about farming that we must not be surprised at the unexpected ways in which animals and plants often behave. This certainly makes farming more fun, but it is apt to make things somewhat confusing. As we become more experienced, however, we shall be less frequently surprised.

QUESTIONS

1. BREAD

1. The forks used in Picture No. 1 are long handled ones. Are these the sort you are accustomed to?

2. Which part of a plough is the *coulter*? There are *knife* coulters and *disc* coulters. Which type is fitted to the plough in Picture No. 2?

3. A drill may be of the *pole* or *steerage* type. Which is shown in Picture No. 3?

4. Why does the horseman walk to one side of his work, instead of right behind the drill?

5. What is the job of the man riding on the binder?

6. Why are there as many as four sacks under the corn spouts? Find out what you can about *head* and *tail* corn.

7. How are the chaff and cavings dealt with in threshing when they are not blown into a heap?

8. How far apart are the heaps of manure usually placed? How many does this make on an acre? How many heaps are made from one cart-load? How many loads per acre is a usual *dressing*?

9. If a drill sows 13 rows, and if the rows are 7 inches apart, what is the *track* (distance from centre to centre of the wheels) of the drill?

10. Corn is usually sacked up by weight. What is the standard weight of a sack of wheat? Is it the same for barley and for oats?

2. MILK

11. If you have a farmer friend, ask him how he feeds his cows. Does he buy any food for them, or does he grow it all on his farm?

12. Do all milkers use a bucket like the one that the man in the centre of Picture No. 4 holds in his hand?

13. How are the buckets and other utensils cleaned after milking?

14. What is the purpose of the string that surrounds the cow's body in Picture No. 3?

15. Why does the water enter a cooler at the bottom and leave at the top? Or doesn't it?

16. Cows vary very much in their yields of milk. If you know a herd, find out how many gallons it gives in a twelve-month. What is the average yield per cow?

17. The average weight of a gallon of milk is $10\frac{1}{3}$ pounds. Convert a yield in gallons into pounds.

3. BUTTER

18. Why is it necessary to turn the handle of the separator at an even speed?

19. What is the little glass window in the lid of the churn for? There is also a ventilator. Why?

20. The milk of some breeds of cows is particularly well suited to the making of butter. What are the names of two such breeds?

21. At what stage in the process of butter-making is the salt, if any, added?

22. If 10 gallons of milk are put through the separator, about how much thick cream will be obtained?

23. It takes about 23 pounds of milk to make a pound of butter. From this can be calculated the approximate amount of butter that a herd will produce.

4. CHEESE

24. In what ways do cheeses differ from one another?

25. Milk contains fat. The fat is in the form of *globules*. Some breeds of cows give milk in which the globules are large, whereas in the milk of others the globules are small. Which is preferred for cheese-making?

26. What are the two small taps on the cheese vat in Picture No. 3 for?

27. Why is it necessary to cut the curd?

28. Assuming that a pound of hard cheese can be made from a gallon of milk, the output of cheese from a herd of cows whose yields are recorded can be calculated.

5. BACON

29. The number of little pigs in a litter varies considerably. What is a satisfactory number?

30. What are common foods for pigs these days?

31. Why is the pigman in Picture No. 3 weighing this weaner?

32. What is the block of material on the left, by the knife, in Picture No. 7?

33. An average weight for a good weaner is about 20 pounds. What would be the *litter weight* of a family of nine with this average? Is this heavier than you are yourself?

34. The *dead weight* of a pig is about 72 per cent of its live weight. About how much meat will therefore be provided by a pig weighing 220 pounds alive?

6. BEEF

35. What are the advantages of keeping bullocks in open yards, like this one, during the winter? See Picture No. 4.

36. Is it better for cattle to walk to market or to ride in a lorry?

37. If there is not much milk to spare, what may be given to bucket-fed calves in its place?

38. Some breeds of cattle are particularly good for beef production. What are these, and which breed is illustrated in Picture No. 6?

39. Most beef cattle weigh between 10 and 14 cwt. when sent to market fat. If the *killing percentage* is 66 per cent, about how much meat will a 12-cwt. beast yield?

7. MUTTON

40. How are sheep kept in your part of the world? Are they ever folded? If so, what crops are grown for them?

41. What time of year are sheep shorn? And when and why are they dipped?

42. Why are sheep folded on a small part of a crop instead of being given the run of the whole field?

43. Why do ewes that are suckling lambs need particularly good feeding?

44. Some breeds of sheep produce more lambs than do others. The Border-Leicester is *prolific* in this way, and 100 ewes can generally be relied upon to produce more than 110 lambs. If 250 ewes reared 300 lambs, what *lambling-percentage* would this be?

45. If ewes are getting 1 pound of cake per head per day, how long will half a ton of cake last a flock of 56 ewes?

8. OATMEAL

46. Is the plough in Picture No. 1 turning a furrow to the right or left? Do all ploughs work the same way?

47. Two horses can turn a furrow here. Is land that is called 'three-horse land' a clay or a sandy soil?

48. If a farmer planned to drill (see p. 3, fig. 3) his corn, and if, for some reason, he had to change his plans and broadcast the seed, would he sow the same quantity of seed per acre? If not, would he sow more or less?

49. Before a field of corn is cut with a binder it is usual to *open up* by hand, with a scythe. Why?

50. Oats may be broadcast at the rate of 5 bushels per acre. How many quarters of seed must be bought in order to sow 12 acres?

51. If this same field of oats yields, at harvest-time, 75 quarters, how many bushels per acre are produced? What return is this—is it more or less than fourfold?

9. TABLE POULTRY

52. If you know a poultry farmer, find out what he does with his surplus cockerels.

53. What pure breeds of poultry, other than those mentioned on page 28, produce very good table birds?

54. How much do table birds cost in the shop? How much does the farmer get for his old hens and for his fat cockerels?

10. EGGS

55. What are the holes for at the end of the house in Picture No. 5? Why is it necessary to shift this type of house often?

56. Is the type of trap-nest front shown here the only one?

57. The eggs on the grader are rolling from right to left, and are being sorted into three grades. Down which chutes will the heaviest and the lightest eggs be delivered?

58. If a farmer puts 200 eggs into an incubator, if 80 per cent of these hatch into chicks, if 90 per cent of the chicks live, and if 50 per cent of the healthy chicks are pullets, how many pullets will he get?

59. A good average yield from a flock of laying birds is 170 eggs per bird per year. What is the annual yield from a flock of 120 birds with this average? How many dozen is this?

11. POTATOES

60. Is there any criticism to be made of the way in which the front planter, the man in Picture No. 1, is putting his potatoes down?

61. What is the purpose of the bag hanging from the curved arm of the spinner in Picture No. 10?

62. How do they plant potatoes in the part where you come from? What is a usual distance between rows?

63. There are a great many varieties of potatoes. What are the popular ones in your district?

64. If 15 cwt. per acre of seed is planted, and if the yield is $7\frac{1}{2}$ tons per acre, is the yield more or less than eight-fold?

65. A farmer intends to spray his maincrop potatoes, of which he has 15 acres. He decides to use Bordeaux mixture, which is made up in the proportions 40 gallons of water, 4 pounds of copper sulphate, and 2 pounds of quicklime. About 100 gallons of the mixture is needed to spray one acre. What quantities of copper sulphate and quicklime will be needed to do the whole crop?

12. BROCCOLI

66. What ways of putting in broccoli, cabbage, and other plants are you familiar with? Are the plants always put in the same distance apart?

67. Why are *four* girls needed on this transplanter?

68. If the plants are to be put in on the square, 2 feet apart each way, how many will be needed to plant $1\frac{1}{2}$ acres?

69. If four out of every five plants on this $1\frac{1}{2}$ acres turn out to be fit for sale, how many broccoli will the farmer have for market?

13. TOMATOES

70. There is a lot to do to tomatoes that is not mentioned in these notes. For example, the side-shoots are pinched out as they develop. Why?

71. Why have the lower leaves been removed from the stem?

72. If 8,000 tomato plants are needed, and if half as many seeds again must be sown, what weight of seed will be needed? (1 pound of seed contains about 128,000 seeds.)

14. SUGAR BEET

73. Why is sugar beet topped before being sent to the factory?

74. What other farm crop has a seed very like that of sugar beet?

75. A field of 9 acres produces an average of $8\frac{1}{2}$ tons per acre of beet. This yields 8 tons per acre of *washed* beet. If

the sugar content is, on the average, 17 per cent, how much sugar does the field produce?

15. APPLES

76. Some fruit-trees grow large, but others remain small all their lives, even though well manured and healthy. Why is this? (The height of the stem has nothing to do with it, for there may be trees of many sizes on both short and tall stems.)

77. What is the purpose of the lever that the man in the background of Picture No. 1 holds in his right hand?

78. What might be the advantages of a tripod ladder like the one in Picture No. 3?

79. An orchard contains apple-trees planted in rows 18 feet apart, and the trees are 15 feet apart in the rows. How many trees are there on an acre?

80. If one tree in nine is of another variety (for pollination), how many pollinators will there be on an acre of the above orchard?

16. HONEY

81. Why is a white cloth spread upon the sloping board when hiving a swarm? See Picture No. 5.

82. On top of the brood chamber and below the shallow frames in which the honey is stored, the bee-keeper puts a perforated sheet of metal called a *queen excluder*. From what is the queen to be excluded (kept out), and why?

83. The honey is run from the extractor (see Picture No. 7) into a container called a *ripenner*. What is this for, and do you think that the name, ripener, is a suitable one?

84. A bee-keeper obtains 30 pounds of run honey from a hive, and estimates that the bees have eaten, during the season, an additional 120 pounds of honey. How much honey did the bees collect? At the present price of honey, how much did the bee-keeper receive if he sold all the honey extracted?

17. GEESE AND DUCKS

85. There are a number of breeds of geese besides the Emden and the English Grey Back. What are some of these, and what are their characteristics?

86. What are the geese in Picture No. 1 doing?

87. A farmer decides to keep geese in order that they may improve a piece of rough grassland. He thinks that there will be room for 25 geese, and he decides to put 4 geese and 1 gander in each *set*. How many geese and how many ganders must he get?

88. A usual method of hatching duck eggs is under a broody hen. If she were sitting on her own eggs they would take 21 days to hatch into chicks. Must she sit for longer or for a less time when incubating duck eggs?

89. Why do water birds spend such a lot of time on the care of their feathers? Observe the duck in the background of Picture No. 4.

90. What other breeds of duck are there besides Aylesburys and Runners?

18. TURKEYS

91. There is much argument about the way in which the turkey got its name. It certainly did not come from Turkey. Collect some opinions.

92. Why has the man on the right of Picture No. 2 tied his handkerchief to his stick?

93. If a turkey, ready for the oven, weighs 15 pounds, and if turkeys are selling at 5s. 2d. a pound, how much will this one cost?

19. WATERCRESS

94. What is the narrow-gauge railway track for in Picture No. 1?

95. The floor of a watercress bed must be on a slight slope, otherwise the bed cannot be drained. How much slope is it usual to give it?

96. A reservoir of water is often provided at the top end of the beds. If the beds cover about an acre and the water is, on the average, about 6 inches deep, how much water must be stored in order to replenish the water in all the beds at once?

20. HOPS AND BEER

97. Which are the *cowls* on the oasts in Picture No. 4? What are they for?

98. Which way round its string does a hop plant grow? Is it always the same, and do all other climbing plants go the same way?

99. If the hop plants are in rows 7 feet apart, and if they are 6 feet apart in the rows, how many plants will there be on an acre?

100. There are male and female hop plants, and they are planted in a hop garden in the proportion of one male to 200 females. If the garden of Question 99 is $6\frac{1}{2}$ acres in extent, how many plants of each type will it contain?

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Round the Year on the Farm. A. G. Street. Cambridge University Press.

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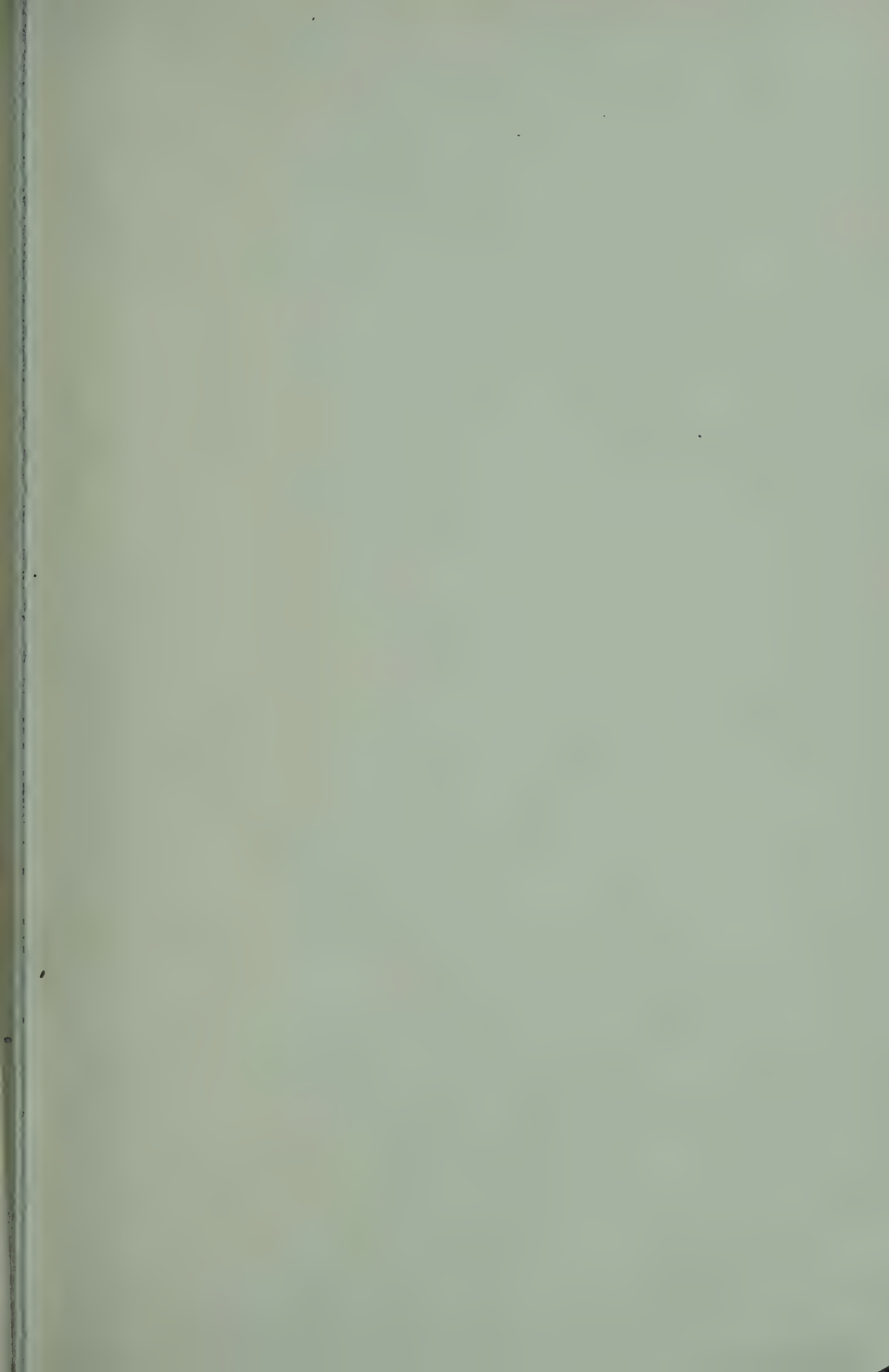
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